Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

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Is mask-wearing hazardous to children? No, the evidence is insufficient

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Dear Editors,

We have read this article by Harald Walach and colleagues (May 28, 2022) with great interest (Walach et al., 2022) because they discuss that wearing nose and mouth covering (NMC) might be hazardous to children's health during the Covid-19 pandemic. In Japan, almost all nursery schools caring for children under six and primary schools (6–12 y. o. children) adopt mask-wearing as a recommendation. Thus, this article evoked concern about infant/child health if we can determine that the content of this paper is scientifically correct. However, we share the following three concerns about this article, including research design flaws and preliminary discussion.

First, this research design contains no comparisons and controls. Only baseline-based comparisons have been made. We believe that comparison control children adjusted for age, gender, body type, and so forth, equivalent to those tested, should have been recruited and validated.

Second, there is an evident measurement bias, and it is unreasonable to derive external validity from this data result. The authors state that "*the blood oxygenation measurements were not carried on after the measurements of the first children had revealed that blood oxygenation never dropped below 98% and was nearly always at 99%*". However, it means that the authors decided that the observation of only one case of finding was enough to apply to the other 44 cases.

Finally, the basis for the conclusion that mask-wearing is hazardous to children needs to be more persuasive because of a lack of scientifically-sound discussion. The authors clarified that the CO2 level around sedentary children's nose and mouth covering (NMC) was high, around 13,100 ppm (SD 380) under a surgical mask and 13,900 ppm (SD 370) under an FFP2 mask. With these findings plus document reviews, the authors conclude that NMC is hazardous to children. However, mere inhalation of high concentrations of CO2 cannot be linked to a hazardous health outcome. We believe that essential robust evidence of hazard to children would be the blood oxygen saturation, respiratory rate, and heart rate data because they are linked with hypercapnia symptoms that lead to respiratory failure. For example, in hypercapnia, the respiratory rate will increase to expel CO2 from the body, and blood O2 levels will decrease in respiratory failure. All these measurements are non-invasive and should have been performed if the authors would like to examine whether NMC has a harmful effect. Furthermore, in the discussion, the authors mention headaches, citing Ong's article ((Ong et al., 2022) and others, but it is not investigated in this study at all. It is not scientific to reference content that has not been investigated and then claim it exists.

We would appreciate it if the authors provided views on these points of concern.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

The authors are unable or have chosen not to specify which data has been used.

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